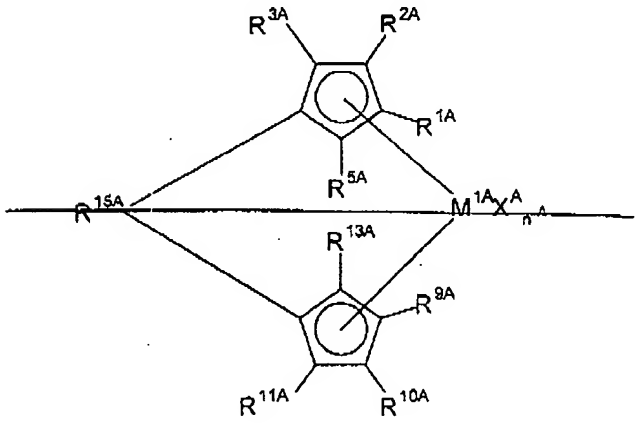
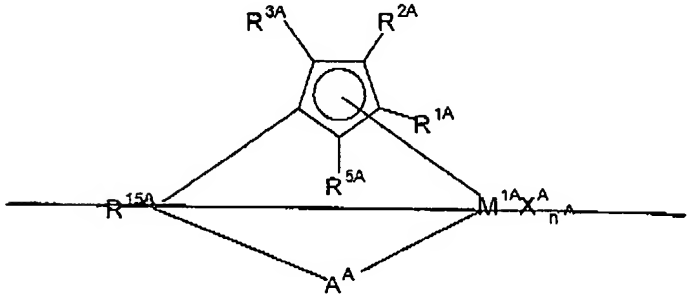
AMENDMENTS TO THE CLAIMS

1. (currently amended) A catalyst system for olefin polymerization comprising:

an organic transition metal compound selected from the group consisting of:



~~(IIIc) and~~



~~(IIId)~~

~~where:~~

~~M^{1A} is titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum or tungsten, or an element of group 3 of the Periodic Table and the lanthanides,~~

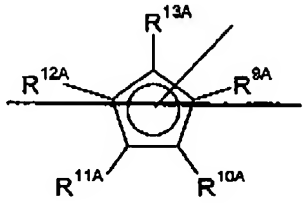
~~X^A are identical or different and are each, independently of one another, fluorine, chlorine, bromine, iodine, hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_6-C_{15}-aryl C_7-C_{40}-alkylaryl, C_7-C_{40}-arylalkyl, $-OR^{6A}$ or $-NR^{6A}R^{7A}$ or two radicals X^A are joined to one another and form a substituted or unsubstituted diene ligand,~~

~~n^A is 1, 2 or 3,~~

~~R^{1A} to R^{3A} and R^{5A} are each, independently of one another, hydrogen, C_1-C_{22} alkyl, 5- to 7-membered cycloalkyl or cycloalkenyl optionally bearing C_1-C_{10}-alkyl groups as substituents, C_2-C_{22}-alkenyl, C_6-C_{22} aryl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl, $-NR^{8A}_2$, $-N(SiR^{8A}_3)_2$, $-OR^{8A}$, $-OSiR^{8A}_3$, $-SiR^{8A}_3$, where the radicals R^{1A} to R^{3A}, and R^{5A} may optionally be substituted by halogen and/or two radicals R^{1A} to R^{3A}, and R^{5A}, together with the atoms connecting them may optionally be joined to form a five-, six- or seven-membered ring,~~

~~R^{8A} may be identical or different and is each C_1-C_{10}-alkyl, C_3-C_{10}-cycloalkyl, C_6-C_{15}-aryl, C_1-C_4-alkoxyl or C_6-C_{10}-aryloxy, and~~

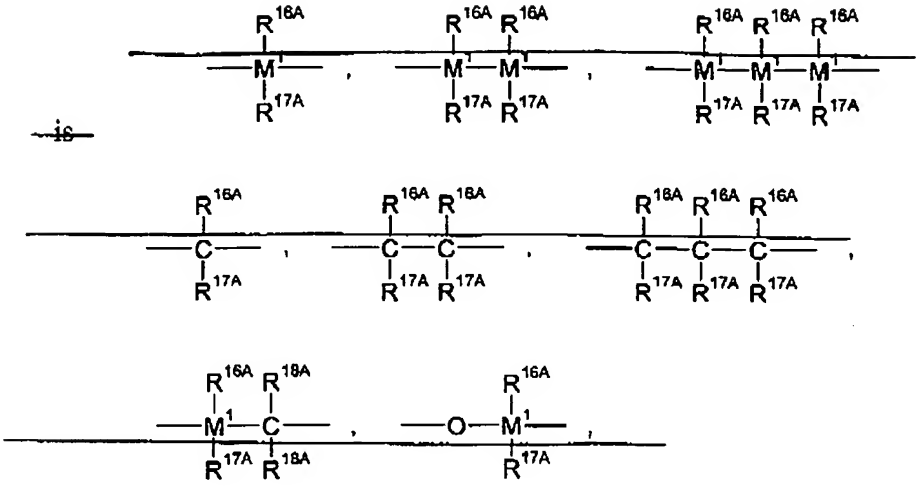
~~Z^A is as defined for X^A or is~~



~~where the radicals~~

~~R^{9A} to R^{13A} are each, independently of one another, hydrogen, C_1-C_{22}-alkyl, 5- to 7-membered cycloalkyl or cycloalkenyl optionally bearing C_1-C_{10}-alkyl groups as substituents, C_2-C_{22}-alkenyl, C_6-C_{22} aryl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl, $-NR^{14A}_2$, $-N(SiR^{14A}_3)_2$, $-OR^{14A}$, $-OSiR^{14A}_3$, $-SiR^{14A}_3$,~~

R^{15A} is



BR^{16A}, $(BNR^{16A}R^{17A})$, AlR^{16A}, Ge, Sn, O, S,

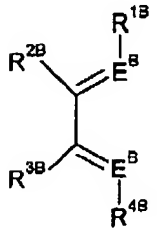
SO, SO_2, NR^{16A}, CO, PR^{16A} or (POR^{16A}),

where

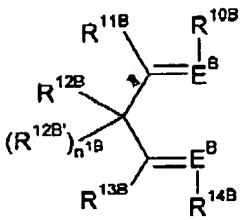
R^{16A}, R^{17A} and R^{18A} are identical or different and are each a hydrogen atom, a halogen atom, a trimethylsilyl group, a C_1-C_{10}-alkyl group, a C_1-C_{10}-fluoroalkyl group, a C_6-C_{10}-fluoroaryl group, a C_6-C_{10}-aryl group, a C_1-C_{10}-alkoxy group, a C_7-C_{15}-alkylaryloxy group, a C_2-C_{10}-alkenyl group, a C_7-C_{40}-arylalkyl group, a C_8-C_{40}-arylalkenyl group or a C_7-C_{40}-alkylaryl group or two adjacent radicals together with the atoms connecting them form a saturated or unsaturated ring having from 4 to 15 carbon atoms, and

A^A is O, S, NR^{19A}, PR^{19A}, OR^{19A}, NR^{19A}_2, or PR^{19A}_2,

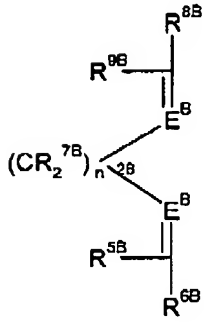
transition metal complexes with at least one ligand of the formulae (IVa) to (IVe):



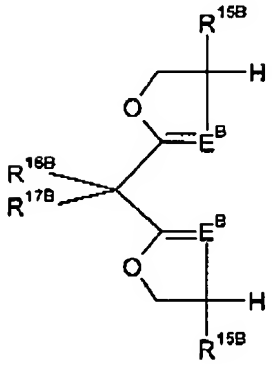
(IVa)



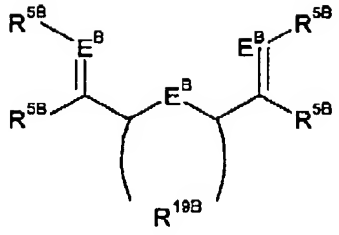
(IVc)



(IVb)



(IVd)



(IVe)

where the transition metal is selected from the group consisting of Ti, Zr, Hf, Sc, V, Nb, Ta, Cr, Mo, W, Fe, Co, Ni, Pd, Pt and the elements of the rare earth metals,

E^B, identical or different, is an element of group 15 of the Periodic Table of the Elements,

R^{1B} and R^{4B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{2B} and R^{3B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where R^{2B} and R^{3B} may optionally form a ring system optionally containing at least one heteroatom,

R^{6B} and R^{8B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{5B} and R^{9B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

where R^{6B} and R^{5B} or R^{8B} and R^{9B} may together form a ring system,

R^{7B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where two radicals R^{7A} may optionally form a ring system,

R^{10B} and R^{14B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{11B}, R^{12B}, $R^{12B'}$ and R^{13B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where two or more geminal or vicinal radicals R^{11B}, R^{12B}, $R^{12B'}$ and R^{13B} may optionally form a ring system,

R^{15B} ~~and R^{18B}~~ are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{16B} and R^{17B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{19B} is an organic radical which forms a 5- to 7-membered substituted or unsubstituted heterocyclic ring system,

n^{1B} is 0 or 1, with the compounds of the formula (IVc) being negatively charged when n^{1B} is 0, and

n^{2B} is an integer from 1 to 4,

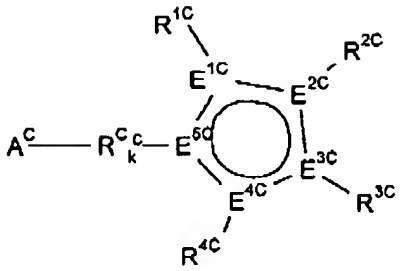
heterocyclopentadienyl complexes of the formula (V):

$$\left[Z^C - M^C - X^C{}_{nC} \right]_{mC} \qquad (V),$$

where

M^C is chromium, molybdenum or tungsten, and

Z^C has the formula (Va):



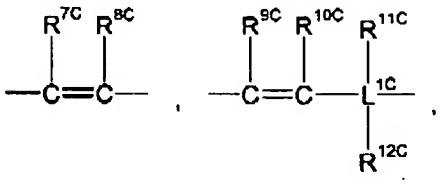
(Va)

where:

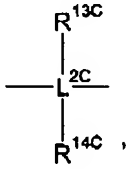
E^{1C}-E^{5C} are each carbon or not more than one atom E^{1C} to E^{5C} is phosphorus or nitrogen,

A^C is $-NR^{5C}R^{6C}$, $-PR^{5C}R^{6C}$, $-OR^{5C}$, $-SR^{5C}$ or an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system,

R^C is one of the following groups:



and, if A^C is an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system, may also be



where

L^{1C}, L^{2C} are each silicon or carbon,

k^C is 1 or when A^{1C} is an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system is 0,

X^C is each, independently of one another, fluorine, chlorine, bromine, iodine, hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, $-NR^{15C}R^{16C}$, $-OR^{15C}$, $-SR^{15C}$, $-SO_3R^{15C}$, $-OC(O)R^{15C}$, -CN, -SCN, β-diketonate, -CO, BF_4^-, PF_6^- or a bulky noncoordinating anion,

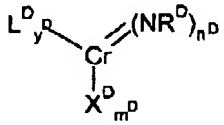
R^{1C}-R^{16C} are each, independently of one another, hydrogen, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, SiR^{17C}_3, where the organic radicals R^{1C}-R^{16C} may optionally be substituted by halogens and two geminal or vicinal radicals R^{1C}-R^{16C} may optionally be joined to form a five- or six-membered ring,

R^{17C} is each, independently of one another, hydrogen, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, and two geminal radicals R^{17C} may optionally be joined to form a five- or six-membered ring,

n^C is 1, 2 or 3 and

m^C is 1, 2 or 3,

imidochromium compounds of the formula (VI):



(VI)

where:

R^D is $R^{1D}C{=}NR^{2D}$, $R^{1D}C{=}O$, $R^{1D}C{=}(OR^{2D})$, $R^{1D}C{=}S$, $(R^{1D})_2P{=}O$, $(OR^{1D})_2P{=}O$, SO_2R^{1D}, $R^{1D}R^{2D}C{=}N$, $NR^{1D}R^{2D}$, $BR^{1D}R^{2D}$, C_1-C_{20}-alkyl, C_1-C_{20}-cycloalkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, or C_7-C_{40}-alkylaryl,

X^D is each, independently of one another, fluorine, chlorine, bromine, iodine, $-NR^{3D}R^{4D}$, $-NP(R^{3D})_3$, $-OR^{3D}$, $-OSi(R^{3D})_3$, $-SO_3R^{3D}$, $-OC(O)R^{3D}$, β-diketonate, BF_4^-, PF_6^- or a bulky weakly coordinating or noncoordinating anion,

R^{1D}-R^{4D} are each, independently of one another, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl or hydrogen if bound to a carbon atom, where the organic radicals R^{1D} to R^{4D} may optionally bear inert substituents,

n^D is 1 or 2,

m^D is 1, 2 or 3,

L^D is an uncharged donor and

y^D is from 0 to 3,

[1,3,5-tri(methyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(ethyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(octyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(dodecyl)-1,3,5-triazacyclohexane]chromium trichloride and
[1,3,5-tri(benzyl)-1,3,5-triazacyclohexane]chromium trichloride;

a cocatalyst comprising:

an ionic compound made up of anions of the formula (Ia),

$$\left[Al(OR^1)_4 \right]^- \qquad \text{(Ia)}$$

where the radicals R^1 are each $C(CF_3)_3$;

Li^+ as a cation; and

an inorganic or organic support.

2. (canceled).

3. (canceled).

4. (canceled).

5. (previously presented) The catalyst system as claimed in claim 1 which further comprises an organometallic compound.

6. (canceled).

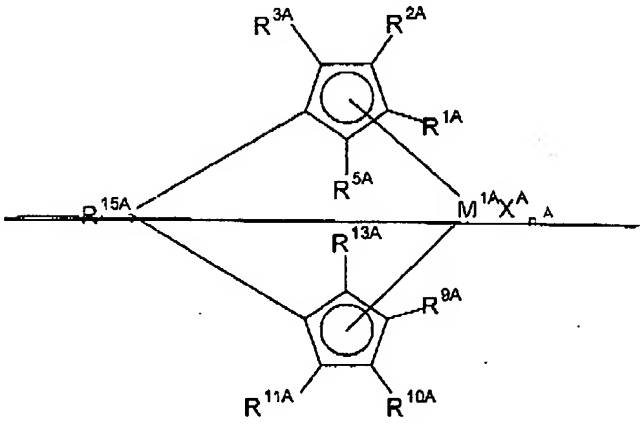
7. (currently amended) A process for preparing the catalyst system of claim 5 comprising:

~~the process comprising:~~

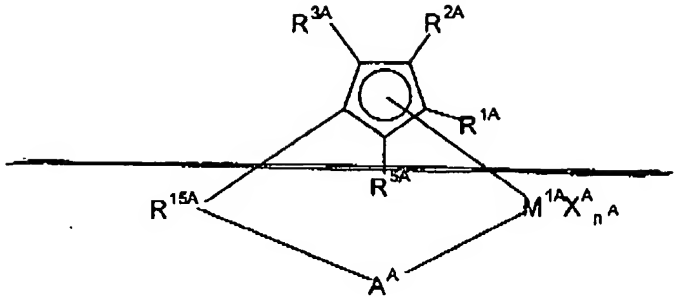
firstly bringing the support into contact with the organometallic compound, thereby forming a reaction product and adding the organic transition metal compound and the cocatalyst to the reaction product.

8. (currently amended) A catalyst system for the polymerization of olefins comprising:

an organic transition metal compound selected from the group consisting of:



~~(IIIc) and~~



(IIId)

where:

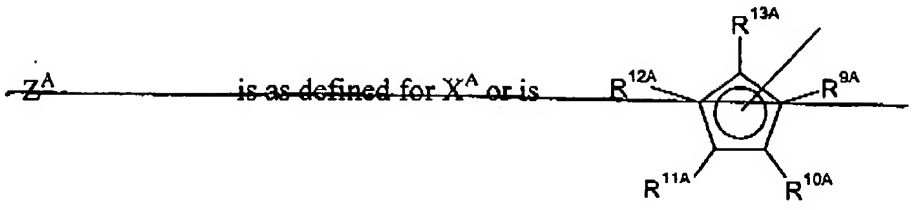
M^{1A} is titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum or tungsten, or an element of group 3 of the Periodic Table and the lanthanides,

X^A are identical or different and are each, independently of one another, fluorine, chlorine, bromine, iodine, hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_6-C_{15}-aryl C_7-C_{40}-alkylaryl, C_7-C_{40}-arylalkyl, $-OR^{6A}$ or $-NR^{6A}R^{7A}$ or two radicals X^A are joined to one another and form a substituted or unsubstituted diene ligand,

n^A is 1, 2 or 3,

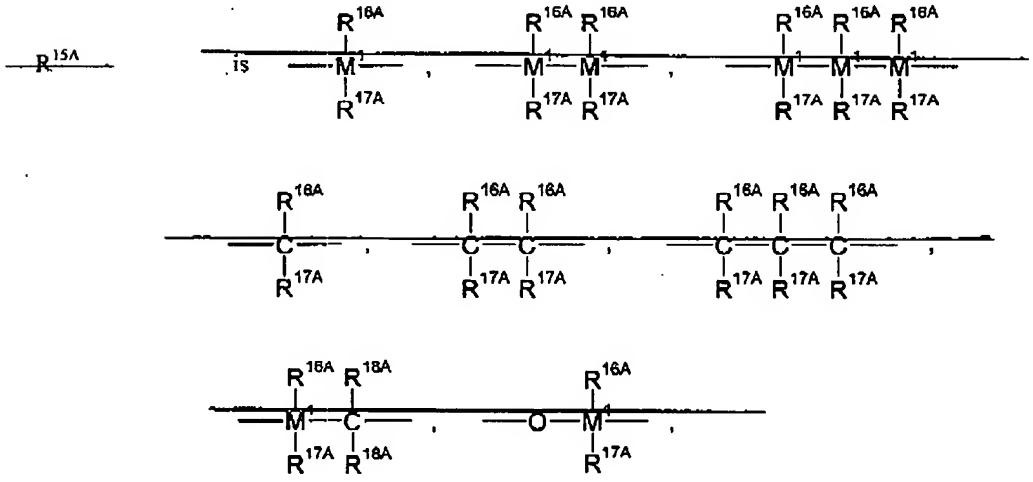
R^{1A} to R^{3A} and R^{5A} are each, independently of one another, hydrogen, C_1-C_{22}-alkyl, 5- to 7-membered cycloalkyl or cycloalkenyl optionally bearing C_1-C_{10}-alkyl groups as substituents, C_2-C_{22}-alkenyl, C_6-C_{22}-aryl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl, $-NR^{8A}_2$, $-N(SiR^{8A}_3)_2$, $-OR^{8A}$, $-OSiR^{8A}_3$, $-SiR^{8A}_3$, where the radicals R^{1A} to R^{3A}, and R^{5A} may optionally be substituted by halogen and/or two radicals R^{1A} to R^{3A}, and R^{5A}, together with the atoms connecting them may optionally be joined to form a five-, six- or seven-membered ring,

R^{8A} may be identical or different and is each C_1-C_{10}-alkyl, C_3-C_{10}-cycloalkyl, C_6-C_{15}-aryl, C_1-C_4-alkoxyl or C_6-C_{10}-aryloxy, and



~~where the radicals~~

~~R^{9A} to R^{13A} are each, independently of one another, hydrogen, C_1-C_{22}-alkyl, 5- to 7-membered cycloalkyl or cycloalkenyl optionally bearing C_1-C_{10}-alkyl groups as substituents, C_2-C_{22}-alkenyl, C_6-C_{22}-aryl, C_7-C_{40}-arylalkyl, C_7-C_{40}-alkylaryl, NR^{14A}_2, $N(SiR^{14A}_3)_2$, OR^{14A}, $OSiR^{14A}_3$, SiR^{14A}_3,~~



~~BR^{16A}, $(BNR^{16A}R^{17A})$, AlR^{16A}, Ge, Sn, O, S,~~

~~SO, SO_2, NR^{16A}, CO, PR^{16A} or (POR^{16A}),~~

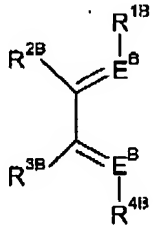
~~where~~

~~R^{16A}, R^{17A} and R^{18A} are identical or different and are each a hydrogen atom, a halogen atom, a trimethylsilyl group, a C_1-C_{10}-alkyl group, a C_1-C_{10}-fluoroalkyl group, a C_6-C_{10}-fluoroaryl group, a C_6-C_{10}-aryl group, a C_1-C_{10}-alkoxy group, a C_7-C_{15}-alkylaryloxy group, a C_2-C_{10}-alkenyl group, a C_7-C_{40}-arylalkyl group, a C_8-C_{40}-~~

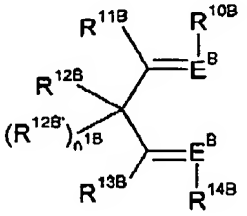
~~arylalkenyl group or a C_7-C_{40}-alkylaryl group or two adjacent radicals together with the atoms connecting them form a saturated or unsaturated ring having from 4 to 15 carbon atoms, and~~

~~A^A is -O-, -S-, $-NR^{19A}$-, $-PR^{19A}$-, $-O-R^{19A}$, $-NR^{19A}_2$, or $-PR^{19A}_2$,~~

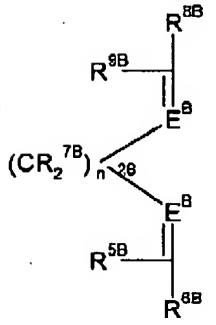
transition metal complexes with at least one ligand of the formulae (IVa) to (IVe):



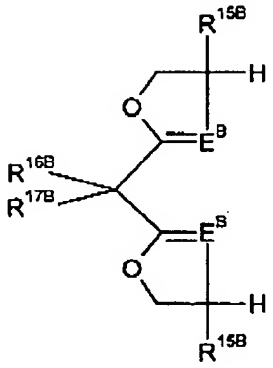
(IVa)



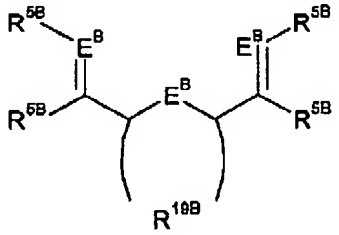
(IVc)



(IVb)



(IVd)



(IVe)

where the transition metal is selected from the group consisting of Ti, Zr, Hf, Sc, V, Nb, Ta, Cr, Mo, W, Fe, Co, Ni, Pd, Pt and the elements of the rare earth metals,

E^B, identical or different, is an element of group 15 of the Periodic Table of the Elements,

R^{1B} and R^{4B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{2B} and R^{3B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where R^{2B} and R^{3B} may optionally form a ring system optionally containing at least one heteroatom,

R^{6B} and R^{8B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{5B} and R^{9B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

where R^{6B} and R^{5B} or R^{8B} and R^{9B} may together form a ring system,

R^{7B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where two radicals R^{7A} may optionally form a ring system,

R^{10B} and R^{14B} are each, independently of one another, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{11B}, R^{12B}, $R^{12B'}$ and R^{13B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical, where two or more geminal or vicinal radicals R^{11B}, R^{12B}, $R^{12B'}$ and R^{13B} may optionally form a ring system,

R^{15B} ~~and R^{18B}~~ are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

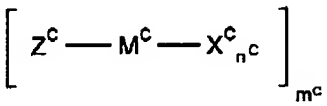
R^{16B} and R^{17B} are each, independently of one another, hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical,

R^{19B} is an organic radical which forms a 5- to 7-membered substituted or unsubstituted heterocyclic ring system,

n^{1B} is 0 or 1, with the compounds of the formula (IVc) being negatively charged when n^{1B} is 0, and

n^{2B} is an integer from 1 to 4,

heterocyclopentadienyl complexes of the formula (V):

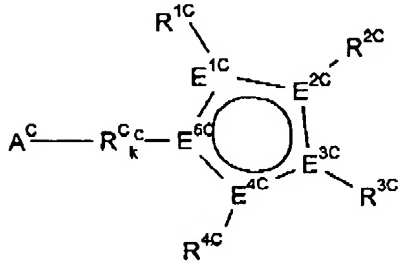


(V),

where

M^C is chromium, molybdenum or tungsten, and

Z^C has the formula (Va):



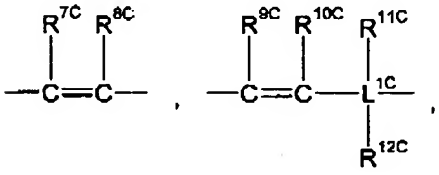
(Va)

where:

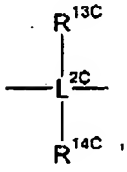
E^{1C}-E^{5C} are each carbon or not more than one atom E^{1C} to E^{5C} is phosphorus or nitrogen,

A^C is $-NR^{5C}R^{6C}$, $-PR^{5C}R^{6C}$, $-OR^{5C}$, $-SR^{5C}$ or an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system,

R^C is one of the following groups:



and, if A^C is an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system, may also be



where

L^{1C}, L^{2C} are each silicon or carbon,

k^C is 1 or when A^{1C} is an unsubstituted, substituted or fused, partially unsaturated heterocyclic or heteroaromatic ring system is 0,

X^C is each, independently of one another, fluorine, chlorine, bromine, iodine, hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, $-NR^{15C}R^{16C}$, $-OR^{15C}$, $-SR^{15C}$, $-SO_3R^{15C}$, $-OC(O)R^{15C}$, -CN, -SCN, β-diketonate, -CO, BF_4^-, PF_6^- or a bulky noncoordinating anion,

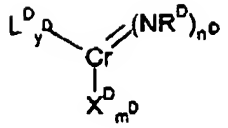
R^{1C}-R^{16C} are each, independently of one another, hydrogen, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, alkylaryl having from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, SiR^{17C}_3, where the organic radicals R^{1C}-R^{16C} may optionally be substituted by halogens and two geminal or vicinal radicals R^{1C}-R^{16C} may optionally be joined to form a five- or six-membered ring,

R^{17C} is each, independently of one another, hydrogen, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl, and two geminal radicals R^{17C} may optionally be joined to form a five- or six-membered ring,

n^C is 1, 2 or 3 and

m^C is 1, 2 or 3,

imidochromium compounds of the formula (VI):



(VI)

where:

R^D is $R^{1D}C=NR^{2D}$, $R^{1D}C=O$, $R^{1D}C=(OR^{2D})$, $R^{1D}C=S$, $(R^{1D})_2P=O$, $(OR^{1D})_2P=O$, SO_2R^{1D}, $R^{1D}R^{2D}C=N$, $NR^{1D}R^{2D}$, $BR^{1D}R^{2D}$, C_1-C_{20}-alkyl, C_1-C_{20}-cycloalkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, or C_7-C_{40}-alkylaryl,

X^D is each, independently of one another, fluorine, chlorine, bromine, iodine, $-NR^{3D}R^{4D}$, $-NP(R^{3D})_3$, $-OR^{3D}$, $-OSi(R^{3D})_3$, $-SO_3R^{3D}$, $-OC(O)R^{3D}$, β-diketonate, BF_4^-, PF_6^- or a bulky weakly coordinating or noncoordinating anion,

R^{1D}-R^{4D} are each, independently of one another, C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_6-C_{20}-aryl, C_7-C_{40}-alkylaryl or hydrogen if bound to a carbon atom, where the organic radicals R^{1D} to R^{4D} may optionally bear inert substituents,

n^D is 1 or 2,

m^D is 1, 2 or 3,

L^D is an uncharged donor and

y^D is from 0 to 3,

[1,3,5-tri(methyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(ethyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(octyl)-1,3,5-triazacyclohexane]chromium trichloride,
[1,3,5-tri(dodecyl)-1,3,5-triazacyclohexane]chromium trichloride and
[1,3,5-tri(benzyl)-1,3,5-triazacyclohexane]chromium trichloride;

an organometallic compound; a cocatalyst comprising an ionic compound made up of anions of the formula (Ia):

$$\left[Al(OR^1)_4 \right]^- \qquad \text{(Ia)}$$

where the radicals R^1 are each $C(CF_3)_3$;

Li^+ as a cation; and

an inorganic or organic support

which is obtained by a process comprising firstly bringing the support into contact with an organometallic compound, thereby forming a reaction product and adding the organic transition metal compound and the cocatalyst to the reaction product.

9. (previously presented) A process comprising polymerizing olefins with the catalyst system of claim 1.